



Fermilab

Closeout Presentations
from
Director's Review
Of
Run IIb DZero
Detector Upgrade
Installation

October 25, 2005

Layer 0

Knowns/Expected issues

- Re-check and measure the gravitational sag of L0.
- Quantify and certify, if possible (accelerometers study ?), the capabilities of the L0 transportation box to withstand and protect the L0 during the transportation. Study and mitigate risks during the human handling of the box in the transportation from SIDET to the D) Collision Hall.
- Create a crew of "understudies" through extensive training at the mock-up station to have additional crew(s) available in case some of the major players of the L0 Installation (Roman, Butler, etc.) are not available or call in sick for a period during the 14 weeks shutdown. Have major players learn how to supervise the new crew.
- Installation Procedure (18 pages document) is a super start. Continue its development, adding picture/drawings for explicative purpose, and ensuring that the primary crews and crews-in-training are aware and knowledgeable about all the steps listed.
- Confirm the time schedule estimates with real-life installation exercises run at the existing L0 mock-up. Run the timing exercises in sequence, performing all the tasks one after the other and understanding the relationship between the end of one task the beginning of the next one. Simulate the D0 installation scenario as much as reasonably possible (i.e. un-installed and un-aligned rails, unglued L0 supports, etc). Feed the results into the main schedule.
- Work with the PPD Management and the Directorate to develop a reporting methodology that allows the Lab management to look at the schedule developments at a level deeper than the ~20 official milestones reported during the review.

Unknowns/Unexpected issues

- Within reason and limits, explore what-if scenarios that could hinder the L0 installation. Examples:
 - G10 disks for L0 mounts. Have extra available and ready for machining if the L0 supports are glued in the wrong position
 - Have the present beam pipe stored away and ready for re-installation if anything happen to the L0 beam-pipe.
 - Make sure PPD ES&H personnel is on call on day #1 of the shutdown for un-expected Be contamination issues.

Technical Issues

Finding, general: The Trigger Upgrade project is to be congratulated for making excellent technical progress at this point. For the most part all of the trigger projects are on the original schedule and are making good use of the additional time afforded but the shutdown schedule change to make progress on system integration, system testing and algorithm development on the sidewalk. The planning for the installation is comprehensive and appears complete. All parts are in hand except the transition cards see recommendation below.

Finding, specific: electrical connector failures are a risk due to age of BLS cables and the sheer number of connections that will be exercised during installation. The project leaders recognize this as a significant risk, are expecting some level of problems and are planning mitigation techniques.

Recommendation: The completion of the production of the transition cards should be tracked to ensure it does not become an issue.

Recommendation: continue system testing and integration as broadly and deeply as possible, continuing to emphasize moving toward physics data.

Resources and Technical and Schedule risks.

Finding: We do not see any technical risks. We just note that two small resource requests were mentioned in the schedule presentation but were not identified as needs in the project presentations.

Recommendation: complete the L1Cal TRR report recommendation to detail the people assigned to specific tasks in order to do the resource analysis and solve resource problems well before the shutdown. This should address schedule risks for the project.

Comment: We expect management to recognize the importance of the trigger upgrade and distribute resources appropriately between Layer 0 and the trigger-upgrade installation tasks.

Safety.

Finding: The projects are aware of the existence of PORCs and ORCs .

Schedule

Cat James, Dean Hoffer, Peter Garbincius

Comment on the Completeness of Shutdown Schedule and Appropriateness of Estimated Duration to Complete

seems quite complete,
MS Project includes predecessors and successors
extensive list of procedures built into schedule

Recommendation: eliminate confusion with two schedule files by taking milestone dates determined for single shift schedule and setting dates for same milestones in the two-shift working schedule (2nd shift where appropriate + 6 Saturdays)
with constraint type = must finish on.
weekend contingency must be used as it occurs, can't bank it for later use

Are the resources appropriately identified to accomplish the required work and are plans in place to supply the needed resources for the installation work?

Planning looks very mature (had been preparing for 31oct05 start of shutdown)
would have been close, more likely mid-November

Recommendation: Don't loose focus!

Set definite milestones for completion of the remaining
legacy pre-shutdown tasks well before start of shutdown:
test run fraction of system with as close as possible readouts now, pre-shutdown
training, paperwork, ES&H, dress-rehearsals, etc.
make sure the status of these pre-shutdown tasks are monitored and checked

D0 has resources identified down to individuals named on MicroSoft Project Plan
D0 has requested additional resources e.g. n-electrical technicians,
under discussion with PPD

Concern – many experts fully subscribed,
watch out for burnout – overtime, etc.
doesn't take into account other D0 assignments (maintenance, etc.)

Have the technical and schedule risks inherent in the installation plan been adequately addressed to assure the installation schedule is achievable?

Working schedule (2nd shift where appropriate & 6 Saturdays)
gives 13 day contingency for unanticipated delays
e.g. clean-up Be contamination, extra leak check, etc.
but did not address disaster scenarios, e.g. catastrophic failure of beam pipe
Such will be major laboratory impact

Regular (weekly) status to Directorate and PPD will be necessary
D0 should set some number of milestones – how many? 20-100?
Thermometer - % complete

How does D0 understand whether it is still on schedule during shutdown?
Daily informal status information gathered by George Ginther
Weekly operations (upgrade + maintenance) meeting

5.0 Management

The installation management organization was not shown. It is clear that George Ginther is in charge of the installation and the subsequent speakers are systems installation managers; however this should be codified in an organization chart.

The current organization appears to be working well, however this observation is based on a very limited review.

The talks were all technical in nature and failed to address all of the topics in the Director's Review charge. For instance, it would have been useful to this reviewer if the talks had described the mechanisms in place to ensure that the schedule was credible, e.g. internal reviews, workshops, planning and coordination meetings. The talks should have also touched on the hazards that are unique to the installation and the means of mitigation.

DZero Installation Review

Closeout Executive Summary

Hardware Readiness

- **Essentially ALL Hardware except the AFEII is ready for installation!!!**
- Some additional effort and tests will be applied between now and the March 2006 shutdown to improve installation readiness and / or reduce commissioning time following installation

Layer 0

- Well prepared given 2004 shutdown measurements, analytical studies, and mock-up testing
- Cooper gave a complete and clear description of Layer 0 mechanical installation plans
- Bagby has Electrical installation for Layer 0 well in hand

Trigger

- This is a complex portion of the upgrade that is as important to running DZero at high luminosities as is Layer 0
- Installation planning is in good shape for components (including cables) remaining to be installed
- Additional efforts and tests planned during time till next shutdown to reduce commissioning time

Schedule

- A convincing case was made for completing the required DZero installation in a 14 week shutdown
- Steps have been taken to judiciously utilize 2nd shift and some Saturdays to assure completion on schedule

Management

- Although a formal installation organizational chart was not shown, the organization is clearly working well!
- An Installation Organization Chart should maybe be prepared for the record and for clarity

Conclusion

- The DZero Collaboration has achieved a status where they could have begun installation on October 31, 2005 as had been planned
- Implementation of additional planned activity between now and the beginning of the March 1, 2006 shutdown will result in the team being even better prepared